



**University of Colombo, Sri Lanka**

*University of Colombo School of Computing*



**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY  
(EXTERNAL)**

Academic Year 2024 — 2<sup>nd</sup> Year Examination — Semester 4

**IT4206 — Enterprise Application Development**

*Part 1 - Multiple Choice Question Paper*  
(2 Hours for both Part 1 and Part 2)

**Important Instructions**

- This paper has **two (2) parts, Part 1 and Part 2**.
- The total duration of **both Part 1 and Part 2 is 2 hours**.
- The final mark for the paper will be determined by averaging the scores of Part 1 and Part 2, each of which is graded out of **100**.
- The medium of instructions and questions is English.
- This paper (Part 1) has **25 MCQ questions** on **6 pages**. Answer **all** questions.
- Each question will have **5 (five)** choices with **ONLY ONE** correct answer.
- Answers should be marked on the **special answer sheet** provided.
- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**
- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, mobile phones, and Calculators are **not** allowed.
- *All Rights Reserved.* This question paper can NOT be used without proper permission from the University of Colombo School of Computing.

- 1). What architectural concept describes the infrastructure responsible for data and control flow within a software system?

(a) Core Concerns	(b) Cross-Cutting Concerns	(c) Plumbing
(d) Abstraction	(e) Orchestration	

- 2). Which of the following code structure is characterised by a single class that assumes excessive responsibility, handling numerous unrelated tasks and possessing a large number of methods and attributes?

(a) Utility Classes	(b) Helper Classes	(c) Service Objects
(d) Data Transfer Objects	(e) God Classes	

- 3). Which of the following is correct about the *server helpers*?

(a) It operates within the same heap of server app.
(b) It retrieves the results generated by methods executed on the client.
(c) It initiates communication requests towards a client-side counterpart.
(d) It resides within the memory space of the application making the remote call.
(e) It directly manages the network connection between the client and server.

- 4). What is the primary purpose of *Distributed Garbage Collection (DGC)* in *Java Remote Method Invocation (RMI)*?

(a) Allows the servers to exploit Java threads for better concurrent processing of client requests.
(b) Makes it simple to write remote Java servers and Java clients that access the servers.
(c) Collects remote server objects that are no longer referenced by any clients in the network.
(d) Uses for object oriented design patterns.
(e) Can move behavior from client to server and server to client.

- 5). Where in the logical architecture of an online shopping application would you locate a component that determines discount rates?

(a) Client tier	(b) Web tier	(c) Business logic tier
(d) Data tier	(e) EIS tier	

6). Which type of Enterprise JavaBean (EJB) does not have defined interfaces for direct client method invocation?

- |                           |                     |                            |
|---------------------------|---------------------|----------------------------|
| (a) Message Driven Bean   | (b) BMP Entity Bean | (c) Stateless Session Bean |
| (d) Stateful Session Bean | (e) Static Bean     |                            |

7). Which of the following accurately describes a Java EE compliant application server?

- |  |
|--|
| (a) A compliant Java EE server typically requires developers to integrate external libraries for building both SOAP and RESTful web services.  |
| (b) A Java EE server offers built-in transaction management that operates automatically, while also allowing developers to implement custom transaction handling when necessary.         |
| (c) Java EE application servers lack any inherent mechanisms for managing transactions; developers are solely responsible for all transaction-related code.                              |
| (d) To interact with databases in a Java EE environment, developers must always rely on external, non-standard APIs as the specification doesn't include a default persistence solution. |
| (e) Java EE compliant servers strictly prohibit developers from having any direct control over transaction boundaries, enforcing purely automatic management in all scenarios.           |

8). Which of the following options does not represent a standard HTTP method?

- |             |            |         |
|-------------|------------|---------|
| (a) OPTIONS | (b) GET    | (c) PUT |
| (d) POST    | (e) CREATE |         |

9). Which of the following Java EE components is/are designed to model and manage data that is permanently stored in a database?

- (a) Entity Bean
- (b) Session Bean
- (c) Message Passing Bean

- |                  |                   |                  |
|------------------|-------------------|------------------|
| (a) a only       | (b) b only        | (c) a and b only |
| (d) b and c only | (e) a,b and c all |                  |

**10).** What is the primary function of the *lookup()* method in the *Java Naming and Directory Interface (JNDI)*?

- (a) It provides a list of objects that match certain search parameters defined in the JNDI environment.
- (b) It retrieves the specific object that is bound to the provided name within the JNDI naming context.
- (c) This method yields a collection of binding objects, each containing a name and the object bound to it.
- (d) It returns a collection of all name-to-class mappings present in the current JNDI context.
- (e) This method identifies and returns the specific Java class that corresponds to the given name in the JNDI context.

**11).** For which session bean type does the container treat each method invocation as an independent operation, without preserving client-specific data between calls?

- (a) Entity Bean
- (b) Message-Driven Bean
- (c) Singleton Session Bean
- (d) Stateless Session Bean
- (e) Stateful Session Bean

**12).** If an EJB container removes a session object, and a client subsequently tries to call a method on that object, what type of exception is likely to be raised?

- (a) `java.rmi.RemoteException`
- (b) `javax.ejb.RemoveException`
- (c) `java.rmi.NoSuchObjectException`
- (d) `javax.ejb.NoSuchEntityException`
- (e) `javax.ejb.ObjectNotFoundException`

**13).** What is the name of the attribute used to define the method that should be executed upon the creation of an object?

- |  |                                    |                                 |
|--|------------------------------------|---------------------------------|
| (a) <code>init</code>                  | (b) <code>init-method</code>       | (c) <code>initialization</code> |
| (d) <code>initialization-method</code> | (e) <code>initialize-method</code> |                                 |

**14).** What is the standard JPA annotation for specifying the join column that links entities in a primary key - foreign key relationship?

- |                 |                 |                |
|-----------------|-----------------|----------------|
| (a) @JoinColumn | (b) @ForeignKey | (c) @JoinedKey |
| (d) @Id         | (e) @Key        |                |

**15).** Which method within the *HttpServletRequest* class is responsible for examining the HTTP request method (like GET or POST) and subsequently calling the corresponding doGet or doPost methods to handle the request?

- |                     |                      |                |
|---------------------|----------------------|----------------|
| (a) handleRequest() | (b) processRequest() | (c) dispatch() |
| (d) service()       | (e) execute()        |                |

**16).** Which HTTP method is the standard way to send data to a server for processing, often resulting in the creation or modification of a resource?

- |             |          |            |
|-------------|----------|------------|
| (a) GET     | (b) POST | (c) DELETE |
| (d) OPTIONS | (e) HEAD |            |

**17).** Which range of HTTP status codes signifies that a request has been redirected and requires further action by the client?

- |         |         |         |
|---------|---------|---------|
| (a) 1xx | (b) 2xx | (c) 3xx |
| (d) 4xx | (e) 5xx |         |

**18).** What is the standard filename for the deployment descriptor file in a Java servlet application?

- |                    |                     |                    |
|--------------------|---------------------|--------------------|
| (a) servlet.xml    | (b) application.xml | (c) web-config.xml |
| (d) deployment.xml | (e) web.xml         |                    |

**19).** Which part of the servlet deployment descriptor is responsible for providing the intermediary name that associates a servlet's code with its web address?

- |                       |                    |                     |
|-----------------------|--------------------|---------------------|
| (a) <servlet>         | (b) <servlet-name> | (c) <servlet-class> |
| (d) <servlet-mapping> | (e) <url-pattern>  |                     |

**20).** Which Java interface provides the means for a servlet to interact with the data sent by a client?

- |                    |                        |                 |
|--------------------|------------------------|-----------------|
| (a) ServletConfig  | (b) ServletContext     | (c) HttpSession |
| (d) ServletRequest | (e) ServletInputStream |                 |

**21).** Which WebSocket annotation is associated with the event of a new connection being established and is used to annotate the corresponding handler method?

- |                    |                 |                    |
|--------------------|-----------------|--------------------|
| (a) @OnOpen        | (b) @OnConnect  | (c) @WebSocketOpen |
| (d) @NewConnection | (e) @Initialize |                    |

**22).** What type of WebSocket frame is used to send messages that manage the connection itself, rather than application data?

- |                       |                    |                  |
|-----------------------|--------------------|------------------|
| (a) Text frames       | (b) Binary frames  | (c) Event frames |
| (d) Management frames | (e) Control frames |                  |

**23).** Which specific container within a JavaEE server is responsible for managing and executing servlet components?

- |                        |                           |                           |
|------------------------|---------------------------|---------------------------|
| (a) Server container   | (b) Web container         | (c) Application container |
| (d) Resource container | (e) Persistence container |                           |

**24).** Which specific type of Enterprise JavaBean (EJB) is designed for asynchronous message processing in Java EE applications?

- |                             |                          |                   |
|-----------------------------|--------------------------|-------------------|
| (a) Entity Beans            | (b) Message driven beans | (c) Session beans |
| (d) Singleton session beans | (e) Request beans        |                   |

**25).** Which Java EE annotation is used to designate a method that should be called immediately following the activation of a stateful session bean?

- |                   |                   |                 |
|-------------------|-------------------|-----------------|
| (a) @PostActivate | (b) @PrePassivate | (c) @PreDestroy |
| (d) @Remove       | (e) @Destroy      |                 |

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